National Institute of Environmental Health Sciences

The effects of weather conditions on measles incidence in Guangzhou, Southern China

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Abstract:

Background: Few studies were conducted to examine the effects of weather conditions on the incidence of measles. Methods: We used a distributed lag non-linear model (DLNM) to analyze the relationship between meteorological factors and measles incidence in Guangzhou, China. Results: Nonlinear effects of temperature and relative humidity on measles incidence were observed. The relative risk (RR) for the measles incidence associated with the 75th percentile of mean temperature (27.9°C) relative to the median of mean temperature (24.7°C) was 1.00 (0.86,1.16) for lags 0-10 days. The RR for the measles incidence associated with the 25th percentile of relative humidity (64%) relative to the median of relative humidity (73%) was 1.36 (1.01,1.82) for lags 0-30 days. The wet effects and dry effects were larger in females than in males. The wet effects were generally increased with ages. Significantly negative effects of cold spells on measles incidence were observed. Conclusion: Both hot and cold temperatures result in decreases in the incidence of measles, and low relative humidity is a risk factor of measles morbidity. An increased number of measles cases might occur before and after a cold spell. Our findings highlight the need to pay more attention to the weather transformation and improve the immunity of susceptible population for measles elimination. Catch-up vaccination campaigns should be initiated among young adults.

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Resource Description

Communication: ☑

resource focus on research or methods on how to communicate or frame issues on climate change; surveys of attitudes, knowledge, beliefs about climate change

A focus of content

Communication Audience: ☑

audience to whom the resource is directed

Health Professional, Policymaker

Exposure : ☑

weather or climate related pathway by which climate change affects health

Meteorological Factors, Solar Radiation, Temperature

Temperature: Extreme Cold, Extreme Heat

Geographic Feature:

resource focuses on specific type of geography

None or Unspecified

Geographic Location:

resource focuses on specific location

Non-United States

Non-United States: Asia

Asian Region/Country: China

Health Impact:

specification of health effect or disease related to climate change exposure

Infectious Disease

Infectious Disease: Airborne Disease

Airborne Disease: Measles

Medical Community Engagement:

resource focus on how the medical community discusses or acts to address health impacts of climate change

A focus of content

Mitigation/Adaptation:

mitigation or adaptation strategy is a focus of resource

Adaptation

Population of Concern: A focus of content

Population of Concern:

populations at particular risk or vulnerability to climate change impacts

Children, Low Socioeconomic Status

Other Vulnerable Population: Adults

Resource Type:

format or standard characteristic of resource

Research Article

Timescale:

time period studied

Time Scale Unspecified

Vulnerability/Impact Assessment: ☑

resource focus on process of identifying, quantifying, and prioritizing vulnerabilities in a system

A focus of content